Hazardous Materials

Fort Wainwright, Alaska
Environmental Officer Course
2011

Outline

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Hazardous Material

- Any material that is capable of posing an unreasonable risk to health, safety, or the environment if improperly handled, stored, issued, transported, labeled, or disposed or the material is listed…
- Categorized into hazard classes and divisions
- The item is a health hazard.
- The item contains asbestos, mercury, or polychlorinated biphenyls.

Hazardous Material

- The item has a flashpoint below 93 C (200 F), or is subject to spontaneous heating or polymerization with release of large amounts of energy
- The item is a flammable solid or is an oxidizer
- The item may produce dusts, gases, fumes, vapors, mists, or smokes with one or more of the above characteristics

Definitions

- Specific Gravity - The ratio of the density of a given solid or liquid substance to the density of water.

- Solubility – A measure of how much solute will dissolve into a solvent.

- Volatile – A flammable liquid having a flash point below 38 C (100 F), or a flammable liquid whose temperature is above its flash point.

Definitions

- Vapor Pressure – The pressure, measured in pounds per square inch exerted by a volatile liquid.

- Emulsion – The state of a substance when its particles are mixed with but undissolved in a fluid or solid.

Flammable Liquid

- Any liquid having a flashpoint below 100 F.
- Per OSHA 1910.106(a)(19)

Combustible

- Any liquid having a flashpoint at or above 100 F (37.8 C), but below 200 F (93.3 C)

Lower Explosive Limit

- The minimum concentration of vapor in air below which propagation of a flame does not occur in the presence of an ignition source.

- Also Lower Flammable Limit

Upper Explosive Limit

- The maximum concentration of flammable vapor in air above which propagation of flame does not occur on contact with a source of ignition.

- Also Upper Flammable Limit

Flashpoint

- The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite

Permissible Exposure Limit

- Regulatory limits on the amount or concentration of a substance in the air. They may also contain a skin designation.

- OSHA PELs are based on an 8-hour time weighted average (TWA) exposure.

Threshold Limit Value

- Guidelines developed by industrial hygienists.

- Informed opinion that exposure at or below the level of the TLV does not create an unreasonable risk of disease or injury.

Lethal Dose 50

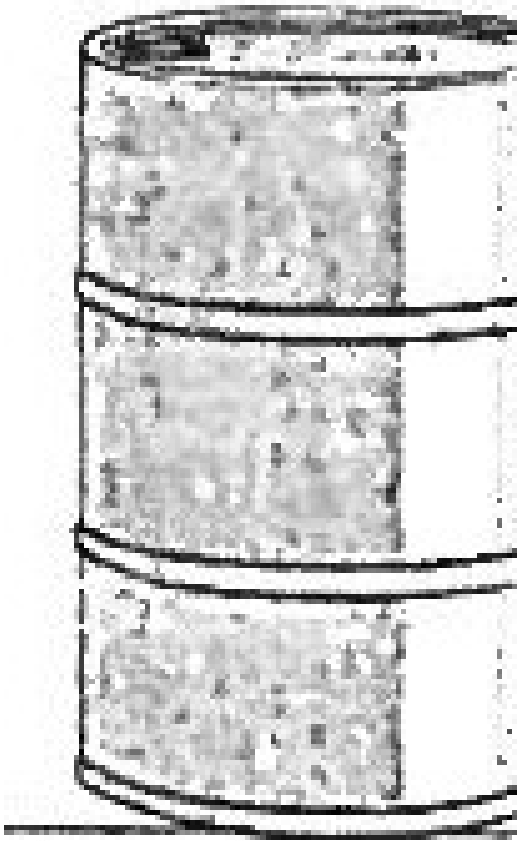
- LD50 is the amount of a material, given all at once, which causes death of 50% of a group of test animals.
- A way to measure the short-term poisoning potential of a material.
- It is usually expressed as the amount of chemical administered (e.g., milligrams) per kilogram of the body weight of the test animal.

Storage Containers: HM/HW

- Good condition and free from:
  - Rust
  - Bulging
  - Severe structural defects
- Compatible with materials stored

Storage Containers: HM/HW

- Incompatibles must be kept separated
- Do not re-use a container previously holding an incompatible
- Always kept closed, except when adding or removing materials



Storage Containers: HM/HW

- Will not be handled in a manner that may rupture the container
- Use caution when opening
- Use drum dollies and bung wrenches
- Repackage if necessary
- Allow 3 feet of aisle space
- Fill only 90% full
- Over-pack Drums
  - Contain a leaking or dented drum
  - Hold many small items (e.g. paint cans) for turn in

HAZMAT Storage

- Store compatibles together
- Use drip pans/absorbent material to prevent spills
- Use secondary containment for liquid hazardous materials
- Contents must be clearly labeled
- Stored horizontally or vertically

Storage Classes

- Radioactive
- Gas, Compressed
- Corrosive
- Low Hazard (General Purpose)
- Oxidizer
- Peroxide, Organic
- Explosive
- Reactive
- Flammable
- Poisonous

Per TM 38-410
See Table C-1 for additional guidance

Storage Facilities

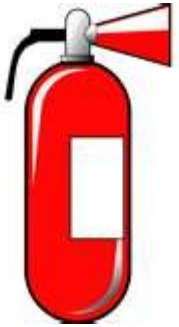
- Storage area registered with ECC.
- Each installation will maintain a master listing of all storage locations for hazardous materials and an inventory of all hazardous materials contained therein.
- Inventory of all HAZMAT current.
- MSDS file maintained at the work center.

Storage Facilities

- Date chemicals upon receipt
- Rotate Stock – first in, first out
- Dispensing areas located away from storm drains.
- Storage cabinets
  - Flammables and Corrosives

Storage Facilities

- Spill Kits
- Eye Wash
- First Aid Kits
- Fire Extinguishers



Flammable Storage

- Flammable Cabinets
  - Flammable separated from aerosols
  - Always kept closed and secured
  - Labeled: “Flammable – Keep Fire Away.”
- 29 CFR 1910.106

Flammable Storage

- Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.
- No storage of water reactive materials with flammables.
- Fire extinguisher located outside of, but not more than 10 feet from, the door opening into any room used for storage.

Flammable Storage

- Fire extinguisher located 10-25 feet from flammable liquid storage area located outside of a storage room but inside a building.
- Exits accessible
- No sources of ignition in the area.
- Nothing stored against a pipe or coil that radiates heat.

Compressed Gas

- Stored 50 feet from other buildings
- Roofed, fenced, and on concrete slab
- Chained to prevent falling
- Signs indicating hazards present
  - "No Smoking"
  - Types of gas

Compressed Gas

- Safety Caps
- Empty cylinders stored separate from full cylinders
- Close valves on empty cylinders
- Label “Empty” cylinders
- Empty cylinders treated like full cylinders

Federal Supply Classification

- A system of groups and classes used to classify items for logistics management.
- First 4 digits of National Stock Number.
- Potential Hazardous Material FSC :

3439	6135	6810	7510	8315	9135
4210	6140	6820	7910	8340	9150
4230	6505	6830	7930	8510	9160
4240	6508	6840	8010	8520	9630
4610	6665	6850	8030	8720	
5675	6740	6910	8040	9110	
5680	6750	7220	8120	9130	

Summary

- Hazardous material identification is important to inventory maintenance and proper storage.
- Hazardous material type and quantities are utilized to determine installation compliance with multiple environmental regulations.
- Identification and knowledge of physical properties hazardous materials is conducive to a safe working environment.

END

INSTALLATION MANAGEMENT COMMAND

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